CLAIMS:

1. An apparatus for controlling the air-fuel ratio of air-fuel mixture drawn into a combustion chamber of an engine, wherein an intake passage of the engine is connected to a canister, wherein the canister adsorbs fuel vapor generated in a fuel tank, wherein gas containing fuel vapor is purged as purge gas from the canister to the intake passage through a purge control device by intake negative pressure generated in the intake passage, the apparatus comprising:

a sensor for detecting the air-fuel ratio of the air-fuel mixture; and

a computer, wherein, according to a deviation of a detected air-fuel ratio relative to a target air-fuel ratio, the computer renews a vapor concentration value representing the concentration of fuel vapor contained in the purge gas by a predetermined renew amount at a time, wherein the computer sets the amount of fuel supplied to the combustion chamber according to the renewed vapor concentration value such that the detected air-fuel ratio seeks the target air-fuel ratio, and wherein the computer sets a smaller value of the renew amount for a greater value of the load on the engine.

2. The apparatus according to claim 1, wherein the engine load is correlated with the intake negative pressure, and wherein the intake negative pressure has a smaller value for a greater value of the engine load.

3. The apparatus according to claim 1, wherein the computer uses the flow rate of air flowing through the intake passage as a parameter indicating the engine load, thereby determining the renew amount.

4. The apparatus according to claim 1, wherein the computer uses the pressure of air flowing through the intake

passage as a parameter indicating the engine load, thereby determining the renew amount.

5. The apparatus according to claim 1, further comprising an air flow rate sensor for detecting the flow rate of air flowing through the intake passage, wherein the computer computes the ratio of an air flow rate detected by the flow rate sensor to a predetermined maximum air flow rate, and sets the computed ratio as an engine load ratio, and wherein the computer uses the engine load ratio as a parameter indicating the engine load, thereby determining the renew amount.

6. The apparatus according to claim 1, wherein the computer sets a smaller value of the renew amount for a smaller value of a purge ratio, the purge ratio representing the ratio of the flow rate of the purge gas purged to the intake passage to the flow rate of air flowing through the intake passage.

7. A vehicle, comprising:

an engine having a combustion chamber, in which air-fuel mixture is drawn;

an intake passage connected to the combustion chamber;

a fuel tank for storing fuel;

a canister that adsorbs fuel vapor generated in the fuel tank;

a purge line connecting the canister to the intake passage;

a purge control valve located in the purge line, wherein, when the purge control valve is opened, gas containing fuel vapor is purged as purge gas from the canister to the intake passage through the purge line by intake negative pressure generated in the intake passage;

an air-fuel ratio sensor for detecting the air-fuel

ratio of the air-fuel mixture;

an air flow rate sensor for detecting the flow rate of air flowing through the intake passage; and

an electronic control unit, wherein, according to a deviation of a detected air-fuel ratio relative to a target air-fuel ratio, the electronic control unit renews a vapor concentration value representing the concentration of fuel vapor contained in the purge gas by a predetermined renew amount at a time, wherein the electronic control unit sets the amount of fuel supplied to the combustion chamber according to the renewed vapor concentration value such that the detected air-fuel ratio seeks the target air-fuel ratio,

wherein the electronic control unit computes the ratio of an air flow rate detected by the air flow rate sensor to a predetermined maximum air flow rate, and sets the computed ratio as an engine load ratio, and wherein the electronic control unit sets a smaller value of the renew amount for a greater value of the engine load ratio.

8. The vehicle according to claim 7, wherein the electronic control unit sets a smaller value of the renew amount for a smaller value of a purge ratio, the purge ratio representing the ratio of the flow rate of the purge gas purged to the intake passage to the flow rate of air flowing through the intake passage.

9. A method for controlling the air-fuel ratio of air-fuel mixture drawn into a combustion chamber of an engine, wherein an intake passage of the engine is connected to a canister, wherein the canister adsorbs fuel vapor generated in a fuel tank, wherein gas containing fuel vapor is purged as purge gas from the canister to the intake passage through a purge control device by intake negative pressure generated in the intake passage, the method comprising:

detecting the air-fuel ratio of the air-fuel mixture;

renewing a vapor concentration value representing the concentration of fuel vapor contained in the purge gas by a predetermined renew amount at a time according to a deviation of a detected air-fuel ratio relative to a target air-fuel ratio;

setting the amount of fuel supplied to the combustion chamber according to the renewed vapor concentration value such that the detected air-fuel ratio seeks the target air-fuel ratio; and

setting a smaller value of the renew amount for a greater value of the load on the engine.

10. The method according to claim 9, further comprising determining the renew amount by using the flow rate of air flowing through the intake passage as a parameter indicating the engine load.

11. The method according to claim 9, further comprising determining the renew amount by using the pressure of air flowing through the intake passage as a parameter indicating the engine load.

12. The method according to claim 9, further comprising:

computing the ratio of the flow rate of air flowing through the intake passage to a predetermined maximum air flow rate, and setting the computed ratio as an engine load ratio; and

determining the renew amount by using the engine load ratio as a parameter indicating the engine load.

13. The method according to claim 9, further comprising setting a smaller value of the renew amount for a smaller value of a purge ratio, the purge ratio representing the ratio of the flow rate of the purge gas purged to the intake passage

to the flow rate of air flowing through the intake passage.